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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,000	06/29/2006	Zenta Sugawara	62533.00051	3943

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EXAMINER

KRAUSE, JUSTIN MITCHELL

ART UNIT	PAPER NUMBER
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3656

NOTIFICATION DATE	DELIVERY MODE
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05/10/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/585,000	Applicant(s) SUGAWARA ET AL.	
	Examiner JUSTIN KRAUSE	Art Unit 3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5 and 7 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6 and 8-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 23, 2010 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4, 6, and 8-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is no antecedent basis for "the rotation output shaft" of either the first or second motor. There is no antecedent basis for "the output shaft" of the third motor.

Regarding claim 10, the phrase, "side by side on both sides of the central axis" is unclear, because it is not clear how the motors are on both sides of the central axis at the same time.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lande et al (US Patent 4,300,362) in view of Madhani et al (US Patent 5,797,900).

Lande discloses a joint structure to be connected to an assembly and a link of a robot comprising:

a first motor (13b) configured to cause the assembly to swing in a longitudinal motion with respect to the link (1),

a second motor (13c) configured to cause the assembly to swing in a lateral motion with respect to the link,

the first motor and second motor disposed so that the output shaft of the first motor and output shaft of the second motor are parallel to one another.

Lande does not disclose the first and second motor output shafts to be orthogonal to the robot link or the output shafts to be rotation output shafts. Madhani teaches drive motors (M1-M5) having rotation output shafts for operating a robot joint which are arranged orthogonal to the robot link and parallel with one another for the purpose of providing a robot joint which is dexterous, low friction, and low inertia (col. 1, line 19).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lande to include drive motors with rotation output shafts arranged orthogonally to the robot link and parallel to one another for the desired purpose of providing a dexterous, low friction and low inertia robot joint.

Further, one of ordinary skill in the art would recognize that the orientation of the motors is a matter of engineering design dependant on the particular output drive mechanism selected for use. The orientation of the motor is dependent on the selection of the gearbox or other power transmission device between the motor output shaft and the driven component. There are known power transmissions which would require the motor to be orthogonal to the robot link (for example, the cable driven system of Madhani, or a bevel gear transmission) in order for the device to function properly.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lande to include drive motors arranged orthogonal to the robot link, as the orientation of the motors is a matter of engineering design selection dependent on the power transfer device selected.

Regarding claim 2, Lande discloses a third motor (connected to pinion 20, not shown but described in col. 2, line 64 - col. 3, line 2), the output shaft of the third motor is shifted by a predetermined amount with respect to a central axis of rotary motion (the "predetermined amount" is the radius of pinion 20), Alternatively, Madhani discloses a third motor (M5), the output shaft being shifted by a predetermined amount with respect to a central axis of rotary motion.

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Regarding claim 4, Madhani discloses a first rotary unit (18a, b) connected to the assembly, and a second rotary unit (22) configured to support the first rotary unit while allowing the rotation around a first axis of the first rotary unit (A), and a base (24), configured to support the second rotary unit while allowing the rotation around a first axis of the second rotary unit (B), wherein the first and second motors are disposed in the base (both Lande and Madhani disclose the motors disposed in the base).

Regarding claim 6, Madhani discloses a motor side pulley connected to an output shaft of the third motor (93), a driven pulley (90) connected to the base and configured to rotate the base around the central axis of the rotary motion, and a belt (C5) configured to transfer the rotation of the motor side pulley to the driven pulley.

Claims 3 and 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Lande in view of Madhani as applied to claims 1 and 2 above, and further in view of Iriyama (US Patent 5,732,599).

Lande discloses a moveable cover (8) configured to be rotatable with respect to at least one of the assembly and the robot link (the moveable cover is flexible, and is free to rotate as the assembly rotates relative to the robot link).

Lande does not disclose an elastic member configured to generate a force between the moveable cover and at least one of the assembly and the robot link, and place the moveable cover in a predetermined position.

Iriyama teaches an elastic member (27) configured to generate a force (sealing force) between a cover (c2) and a robot arm component for the purpose of sealing the robot joint against contaminants from the environment (col. 5, lines 25-30).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lande to include an elastic member configured to generate a force between the moveable cover and one of the robot link and the assembly for the purpose of providing a sealing force which prevents contamination from the environment as taught by Iriyama.

Regarding claim 8, Iriyama discloses a contact face to which the elastic member is contactable is formed on the movable cover (see fig 5), and a stopper (the groove which the elastic member is fitted is a stopper) which contacts with the elastic member to control the range of rotation around the central axis of rotary motion of the moveable cover is provided at an inside periphery of the movable cover.

Regarding claim 9, Lande discloses the first motor and second motor disposed side by side on one and other sides of the central axis of the link respectively (figs. 2 and 3).

Regarding claim 10, Madhani teaches motors arranged side by side on both sides of the link and the rotation output shaft of first and second motors parallel to each other and orthogonal to the link (fig. 3).

Allowable Subject Matter

Claims 5 and 7 are allowed.

Response to Arguments

Applicant's arguments filed April 23, 2010 have been fully considered but they are not persuasive.

Applicant argues it is not obvious to combine the drive system of Madhani with the device of Lande. Applicant argues the drive systems operate differently so there is no reason to substitute hydraulic jacks for motors.

Both hydraulic jacks and motors are known means of imparting a force to a device. One of ordinary skill in the art would recognize this fact and possess the necessary skill to adapt a device to be driven by any known means of imparting motion. One of ordinary skill in the art also one of ordinary creativity, not an automaton, and would possess the necessary skills to adapt a drive system to be used with a particular device.

Regarding applicant's argument as to the placement of the motors, there is no limitation in the claims as to the location of the motors within the device as the position relates to the joint, and thus the claim fails to limit the placement of the motor within the device. With regard to orientation, the output means of the motor governs the orientation of the motor within the device, as is discussed in the office action above. It is maintained that matters of engineering design are relevant and a reason for a particular orientation to be used. Otherwise, how did applicants select a particular

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arrangement? As is discussed above, the motor must be positioned in an orientation that permits the motion to be transferred to the intended output motion. This transfer is contingent on the motion transmitting arrangement between the motion input (motor, actuator, hand crank, etc...) and the output. Thus, engineering design will dictate the orientation of the input be arranged according to the desired output motion and, and the means of transferring motion from the input to the output. As is disclosed in Madhani, the cable system between the joint (output) and motor (input) dictates the motor be arranged in a particular orientation.

Regarding the displacement from the joint, as previously stated, no limitation in the claim restricts the position of the motor relative to the joint. Further, should applicant seek to claim the position of the motors with respect to the joint, it is within the level of ordinary skill in the art that the cable length of Madhani is adjustable to alter the position of the motor with respect to the joint.

With regard to the argument that one of ordinary skill in the art would also likely use the rest of the mechanism of Madhani, applicant exceeds the scope of combining the motor arrangement with the device of Lande.

With regard to the argument of lack of motivation, first, such an argument has been foreclosed by the decision in *KSR v. Teleflex*, and second, the fact that applicant disagrees with the reason for combining is not a valid basis for patentability when the device is otherwise obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUSTIN KRAUSE whose telephone number is (571)272-3012. The examiner can normally be reached on Monday - Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Justin Krause/
Examiner, Art Unit 3656